2. (1.5 points)

Given the following:

Effective Date	Rate Change
September 1, 2012	-10%
September 1, 2013	-5%
September 1, 2014	-3%

- A law change mandated a rate decrease of 15% effective February 1, 2015 applicable to all in-force policies.
- All policies are annual.

a. (1 point)

Calculate the on-level factor to current rate level for calendar year 2014 earned premium.

b. (0.5 point)

Identify a weakness with the parallelogram method and briefly describe a solution.

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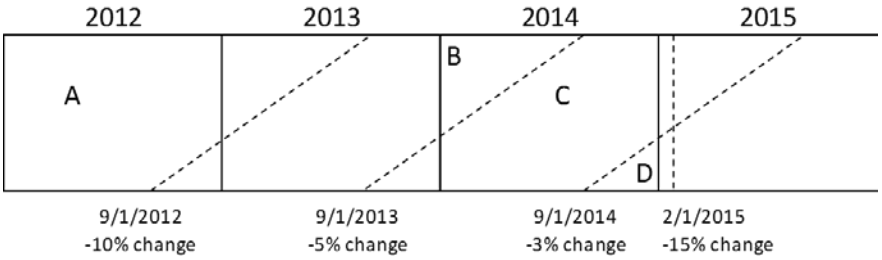
QUESTION 2	
TOTAL POINT VALUE: 1.5	**LEARNING OBJECTIVE: A2**

SAMPLE ANSWERS

Part a: 1 point

Sample Answer 1



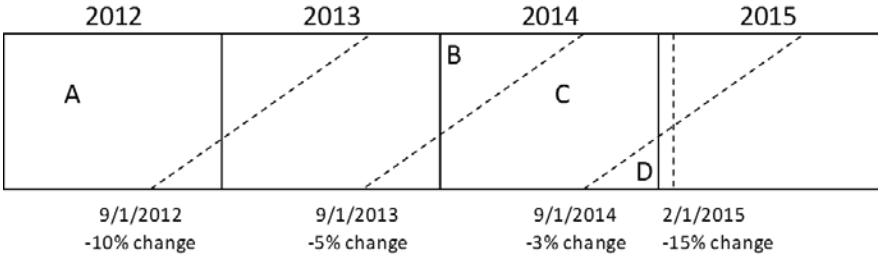
Period	B	C	D
Weight in CY 2014	= .5 x (8/12) x (8/12) = .2222	= 1 - Area B - Area D = .7222	= .5 x (4/12) x (4/12) = .0556
Cumulative Rate Level	1	0.95	= 0.95 x 0.97 = .9215

2014 Average Rate Level = .2222 x 1 + .7222 x .95 + .0556 x .9215 = .959528

Current Cumulative Rate Level = 1 x .95 x .97 x .85 = .783275

On-Level Factor for 2014 = .783275 / .959528 = .816313

Sample Answer 2



Period	B	C	D
Weight in CY 2014	= .5 x (8/12) x (8/12) = .2222	= 1 - Area B - Area D = .7222	= .5 x (4/12) x (4/12) = .0556
Cumulative Rate Level	.90	= .9 x .95 = .855	= .9 x .95 x .97 = .82935

2014 Average Rate Level = .2222 x .9 + .7222 x .855 + .0556 x .82935 = .863575

Current Cumulative Rate Level = .9 x .95 x .97 x .85 = .704948

On-Level Factor for 2014 = .704948 / .863575 = .816313

Part b: 0.5 point

Sample Answer 1

One weakness is the assumption of uniform writings of policies throughout the year. A way to improve upon this is to use extension of exposures to rerate all policies using current rates/relativities.

Sample Answer 2

It assumes premiums are written evenly within each period. For seasonal lines of business, this may not be very applicable. Using parallelogram method on quarterly or monthly data may be able to increase accuracy.

Sample Answer 3

Parallelogram method is only able to project to current an average rate impact and therefore leads to inaccurate results when rate has been targeted towards particular segments (classification ratemaking) and the mix of business changes. This can be resolved via the extension of exposure method where policies are individually (by a computer, generally) rerated using the current rates.

EXAMINER'S REPORT

Part a

Candidates were expected to demonstrate how to calculate an earned premium on-level factor using the parallelogram method. This included calculating the weights and average rate level for a calendar year, the cumulative rate level, and the final factor itself.

Common mistakes included:

- Misapplying the law change, such as using a 15% increase instead of a decrease or applying the change to 2/1/2014 instead of 2/1/2015
- Switching rate changes and effective dates, misreading values, or forgetting to include rate or law changes in the CRL or 2014 average rate level calculations
- Incorrectly calculating the weights for each rate level within calendar year 2014. The most common miscalculation was calculating the weights as if the rate changes were occurring on 10/1 rather than 9/1

Part b

Candidates were expected to know a weakness with the parallelogram method as well as a correct solution to the given weakness.

Common mistakes included:

- Not fully identifying either the weakness or solution, such as only mentioning "uniform distribution" without context regarding issuing policies or the time period
- Confusing the concept of uniform issuing of policies with uniform earning of premium